REQUIREMENT 20

DETAILED REQUIREMENTS FOR THERMISTORS

20. General. This section describes detailed requirements for a DPA of commonly used thermistors. These requirements supplement the general requirements in section 4. An example of a typical configuration is depicted on figure 20-1. When applicable, specification numbers or types are referenced to assist in identification. Pre-DPA tests, such as functional tests and solderability tests, are assumed to have been satisfied by normal inspection and testing and are therefore not addressed.

20.1 Thermistor, glass bodied, hermetic (MIL-PRF-23648).

20.1.1 Method.

20.1.1.1 External visual. Examine thermistor at 20X minimum magnification for defects in the glass, construction, marking, leads, and dimensions.

20.1.1.2 Sample preparation. Parts shall be cleaned, encapsulated, and sectioned along the longitudinal axis to a depth that exposes the center of the leads.

20.1.1.3 Internal visual. Examine sectioned parts under 30X minimum magnification for configuration compliance and compliance with specification requirements and good workmanship.

20.1.2 Data records. DPA findings that deviate from the specified configuration or other requirements shall be documented as defects.

20.1.3 Evaluation criteria. When the DPA is being conducted as a lot conformance test, the associated production lot shall be rejected if one or more of the DPA samples exhibit any of the defects listed below (as applicable to the type of part being examined):

a. Cracks in the body.

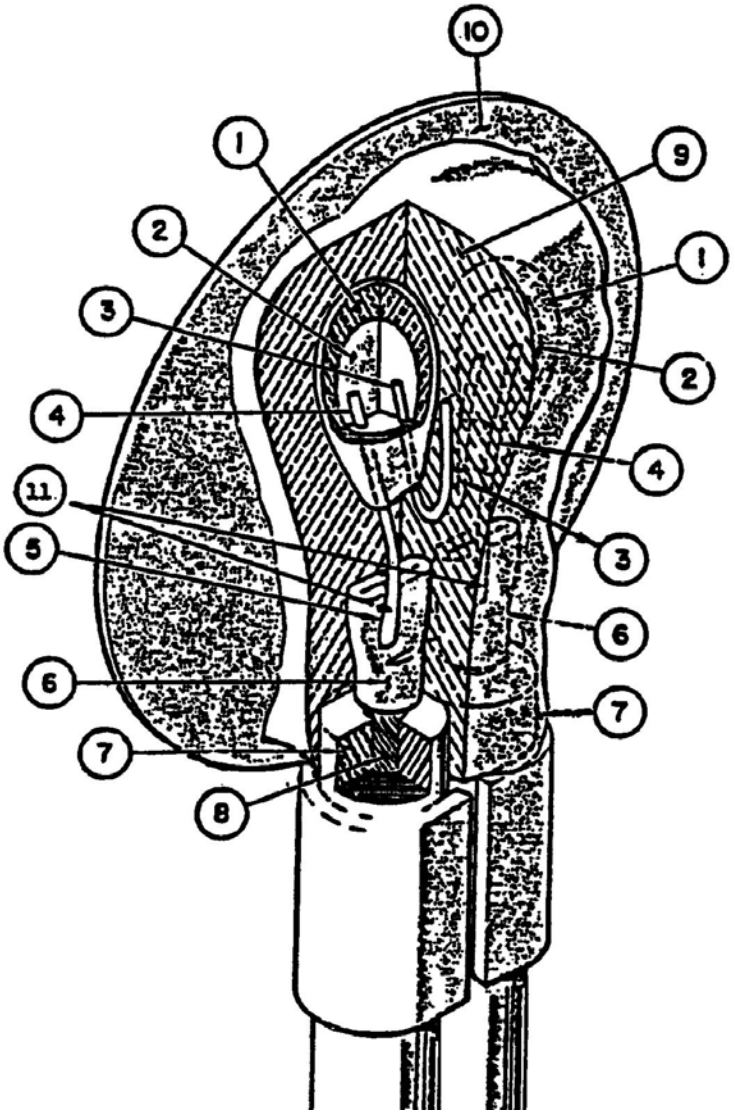
b. Cracks in the semiconductor material.

c. Discoloration or distortion of body or semiconductor material.

d. Contamination.

e. Wire-to-tab weld showing cracks or inadequate weld indentation.

f. Broken wire, or dents in the wire greater than one-sixth of the wire diameter.



1	Glass Coat
2	Thermistor Element
3,4,5	Platinum Wire
6	Weld Tab
7	Insulation
8	Lead Wire
9	Cap
10	Mounting Plate
11	Wire Weld to Tab

FIGURE 20-1. Thermistor, glass body (typical).

20.2 Thermistor, disc and bead encapsulated (MIL-PRF-23648).

20.2.1 Method.

20.2.1.1 External visual. Perform visual inspection at 20X minimum magnification as in 10.1.1.1.

20.2.1.2 Sample preparation. Strip plastic coating or case from one-half of the samples, using a suitable solution, that exposes but does not attack the thermistor body and lead terminations. The remaining half shall be encapsulated and sectioned along the longitudinal axis to a depth that exposes the center leads.

20.2.1.3 Internal visual. Examine depotted and axially sectioned samples at 20X minimum magnification for configuration compliance, uniformity, cracks in the body, evidence of metallization on body of disc between lead attachment surfaces, lead insulation, and solder connections. Encapsulated units must be sectioned in a plane such that the connections between the lead and thermistor element are exposed.

20.2.2 Data records. DPA findings that deviate from the specified configuration or other requirements shall be documented as defects.

20.2.3 Evaluation criteria. When the DPA is being conducted as a lot conformance test, the associated production lot shall be rejected if one or more of the DPA samples exhibit any of the following defects:

a. Cracked body.

b. Evidence of metallization on body of disc between lead and attachment surfaces.

c. Cold solder or loose solder attachment of leads on disc.

d. Lead insulation not mechanically secured to prevent stress on soldered terminations.

e. Discoloration or contamination on body of disc.